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PULSE CONTROL IN LASER SYSTEMS

Abstract of the Disclosure

A pulsed laser system includes a laser pump, a laser rod, a reflector interposed between the laser pump and the laser rod, through which energy from the laser pump enters the laser rod, an output reflector through which energy is emitted from the laser rod, a switch interposed between the laser rod and the output reflector, and a control device. The switch, when closed, causes energy to be stored in the laser rod and, when opened, allows energy to be emitted from the laser rod during an emission period. The control device allows a primary laser pulse emitted from the laser rod during the emission period to impinge on a workpiece and blocks from the workpiece secondary laser emission occurring during the emission period after emission of the primary pulse. The pulsed laser system is operated over a range of repetition rates, so as to cause laser energy to be emitted during a plurality of emission periods at each repetition rate. At least a portion of the laser energy emitted during the emission periods is directed toward the target structure in order to perform passive or functional trimming of the target structure. The switch is closed for a fixed, predetermined period of time prior to each emission period regardless of repetition rate of the primary laser pulse within the range of repetition rates in order to store energy in the laser rod. The pump is operated continuously at constant power.

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